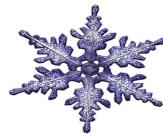




# LEAPS NEWSLETTER

## UPCOMING EVENTS



Winter Break!  
December 17, 2007  
-  
January 1, 2008



VOLUME 2, ISSUE 2

SANTA BARBARA JUNIOR HIGH SCHOOL

DECEMBER 2007

## Computers, Better Than People at Identifying Faces

By: Thomas Kuo, LEAPS Fellow



An image created using a computer to identify faces.

Computer face recognition is the field of using computers to match a face to a set of known faces. It can be used to find fugitives or to identify people like a driver's license. Modern systems perform as well as humans in identifying faces, according to the FRVT 2006 evaluation. Facial changes, e.g. expression, facial hair, make-up, lighting, and age, make this task difficult. One way to identify faces is to extract features from the set of known faces and to find the best measure that divides them. Improving on this basic technique creates software that can do twice as well as humans in clear, uncluttered images.

## FUSE Night

By: Reggie Archer, LEAPS Fellow

After hearing about all the fun the students are having in the LEAPS 8<sup>th</sup> grade science classrooms, parents & families joined their SBJHS students at Family Ultimate Science Exploration (FUSE) Night to actually "do" science of their own! On November 14<sup>th</sup> 2007, over 45 families participated in interesting and fun hands-on activities to explore biology, chemistry and physics in both Spanish and English! Led by the LEAPS fellows, Ms. Kluss, Ms Garza and other volunteers, the families embarked on a journey to explore the creation of Kelp beads, Elephant toothpaste and Electromagnetic motors. The night started off with some refreshments and an opportunity for parents and kids to meet other parents, teachers and scientists. Passports then directed them to different stations of science to conduct the hands-on activities. While everyone had a chance to do all the activities, some really enjoyed the chemical reactions from chromatography that caused a big column of foamy substance to shoot out of the cylinders while making the elephant toothpaste. After learning about electromagnets and motors, the families built their own motors and got to take them home. The biology station was just as exciting, allowing everyone to make invisible and colorful beads out of Kelp! With no TV to distract the kids, the parents got a different way to experience how their children learn and get excited about science and to really get involved in the educational process. We hope to see you at the next FUSE night in the spring!



Families create kelp beads at FUSE night.

**Rabbit Answer:** Gray hair results from a reduction of pigmentation.  
- Internal Factors: Genetic defects, age, hormones, body distribution.  
- External Factors: Chemical exposure, toxins, climate, pollutants.

## Fun Facts

- \* Sound travels about 4 times faster in water than in air.
- \* Due to gravitational effects, you weigh slightly less when the moon is directly overhead.
- \* Porcupines float in water.
- \* The most dangerous animal in the world is the common housefly. Because of their habits of visiting animal waste, they transmit more diseases than any other animal.
- \* Hydrofluoric acid will dissolve glass.

## Let's Explore

### Density of Water

As you learned in your density labs, the density of water (H<sub>2</sub>O) is 1 g/cm<sup>3</sup>. What you may not know is that the density of water can change as the temperature of the water changes. When water warms up, the H<sub>2</sub>O molecules that make it up have more space between them. This causes the water to be less dense. As water gets colder the H<sub>2</sub>O molecules get closer together. This causes the water to be more dense. Water is not the only substance whose density is changed by changing temperature. All substances become more dense as they get colder.

## The LEAPS After School Club

By: TomRico, After-School LEAPS Program



This club member shows off his newly built oven.

With no home work or classwork to interfere with the fun, many students have visited the after-school Leaps club to participate in fun science experiments happening every week. The club has been a hit because it is all about having fun while learning about science, not to mention there are tons of free snacks! Students have experimented and built many things in the past several weeks, including colorful jack-o-lanterns using homemade circuits and powerful solar ovens, like the one in the picture. These ovens were used to amplify the power of the sun to cook pizza and s'mores for the club members to eat! Club members have much to look forward to in the next several weeks, with upcoming field trips and new experiments! If you think you are the kind of person that loves to have fun building and experimenting with science, new club members are always welcome!

## 5 Things You Did Not Know About...



## Marie Curie!

1. She pioneered the field of radioactivity.
2. She won the Nobel prize in Physics (1903) and in Chemistry (1911).
3. The unit of radioactivity *Curie* (Ci) is named after her and her husband.
4. The notebooks she used are still radioactive.
5. She named the first new chemical element that she discovered *Polonium* for her native country Poland.

# LEAPS in the Classroom

By: Lina Kim, LEAPS Fellow

## STATES OF MATTER

NDI CLHI HPS ART  
 OHI SAE OI MUI LE  
 I S STHI NEGOT SE  
 SDNDMMLVUHSRE  
 NILUVGSI PPROR  
 ENI LLATS YRCRA  
 TRQPGVUCNOCLA  
 EYUQCECOLMAUG  
 COI SPLASMANDU  
 ALDLSOLIDNSCD  
 FUMOI EYTTSSSI  
 RCRAADRYYTASS  
 UUSUOMTPELEUO  
 SHEUAOSNSUSYO

Turn in for 1pt.  
extra credit!

amorphous  
 crystalline  
 gas  
 liquid  
 plasma  
 pressure  
 solid  
 surface tension  
 viscosity

## Fellow of the Month:

**Ms. Kline**



Ms. Kline started out on a farm in central Pennsylvania. As a child, she spent most of her time outdoors. She has always been fascinated by how the natural world works, especially the importance of water to all life and as a destructive force that changes the surface of the Earth. She obtained a BS at Penn State University in Geology and Earth Systems, and got to study geology abroad in Australia for a semester. She is now at UCSB studying underground petroleum spills and their interaction with aquifers –otherwise known as contaminant hydrogeology. Aside from her many nature related interests, she also enjoys salsa, rock climbing, yoga, meditation and being part of Engineers Without Borders at UCSB.

## Ribbit: Why does hair turn gray?



Cause they're old!

Susy Olmedo



Because of genes in your DNA.

Fernando Arellano



Because you know too much.

Jennifer Gutierrez



Not everything lasts forever.

Carlos Torres



Gray is the new black.

Sophie Sterling

See Page 1 for the scientific answer!

### About LEAPS

Let's Explore Applied Physical Science (LEAPS) engages UCSB graduate and undergraduate Fellows as instructors and mentors for inquiry-based science in Grade 8 classrooms. By establishing collaboration between Fellows, science teachers, and UCSB scientists in school classrooms, the LEAPS project implements hands-on, minds-on learning experiences in physical science.

LEAPS partners with the Endowment for Youth Committee in Santa Barbara to coordinate after school clubs at junior high sites. The Fellows also help younger students to prepare for Family Science Nights that foster community interest to science education and opportunities.

### Fellows

Reggie Archer  
 Lindsay Gary  
 Anthony Karmis  
 Lina Kim  
 Kimberly Kline  
 Thomas Kuo  
 Amir Rahimi

### Teachers

Marilyn Garza  
 Julie Kluss

### UCSB Participants

Beth Gwinn  
 Fiona Goodchild  
 Wendy Ibsen  
 Samantha Freeman

Visit the LEAPS website: [www.leaps.ucsb.edu](http://www.leaps.ucsb.edu)  
 Send questions or comments to [mgarza@mgarza.com](mailto:mgarza@mgarza.com)



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